THIRD EDITION.

# A COMPLETE COURSE

OF

# WRIST

AND

# FINGER GYMNASTICS

BY

A. LEFFLER ARNIM,

(Author of "The Art of Figure Culture," "Health Maps," etc., etc.)

FOR STUDENTS OF THE

## PIANO, ORGAN, VIOLIN,

AND OTHER INSTRUMENTS.

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# Preface to Third Edition.

The third edition of this little book, which I now present to my readers, has not called for any great additions or changes. It is my wish to make it useful to instrumentalists of all kinds, over and above those for whom the book is principally written; *i.e.*, performers on the pianoforte and violin. But, as I am mysel not at all acquainted with the difficulties which have to be encountered in the practice of other instruments, I can only give general, and not particular, rules for guidance. However, as I firmly believe that a remedy is to be found for every technical difficulty that may confront the player of any sort or kind of musical instrument, by suitable exercises, if only the nature of the difficulty is known; I shall be very glad to hear from those persons who cannot find the particular aid for which they seek in these pages.

I should like to take this opportunity, too, of impressing upon my readers the use and necessity of the PASSIVE EXERCISES. They are few in

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number, and are simplicity itself; and that is why they are so often neglected. I emphatically repeat that they are indispensable, and should be carefully practised according to the rules given for their performance. I would also suggest that the page of RULES should be legibly copied out on a card, and placed before the student for easy reference during the performance of the Exercises.

I wish to tender my thanks to many of my readers for the kind and encouraging remarks they have made in reference to this book, and to assure them that they have been very gratefully received and much appreciated.

ANNA LEFFLER ARNIM.

2, *Hinde Street, W.*

*January*, 1894.

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# Preface to Second Edition.

This little book has found its way into a second edition; a proof that it has its practical use for the present generation: for to that fact alone can I ascribe its escape from the whirlpool of oblivion into which so many books at the present day,—good, bad, and indifferent, are greedily drawn.

Encouraged by this thought, I venture to send it on its travels again, with a little additional matter, which I hope may enhance its usefulness.

The book itself owed its existence in the first place, to a little sprained, tired wrist, which happened to come under my care, and which had been ruined by hard and excessive practice at the piano, and whence the idea was developed of strengthening the fingers and wrists, and of making them supple by specially adapted scientific exercises.

In like manner I have to thank a pupil of mine for the chapter for violinists. Her playing, her execution and expression is masterly; but when I made her acquaintance she held herself badly, and it appeared probable that ere long the beloved violin would be answerable for irreparable mischief.

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We spent a few interesting hours together, and the last time I had the pleasure of hearing her play, it was a real delight to watch the straight, even shoulders, the light graceful sweep of the bowing arm, and the skilled and rapid transitions of the left hand over the notes during a difficult scherzo, the well-balanced head and the faint rhythmic sway of the body keeping graceful time with the music.

I may thank her here for the opportunity she has perhaps given me of helping others to play the violin not only well, but gracefully.

Few will deny that it enhances one's pleasure tenfold; it gratifies the eye as well as the ear, if we see a violin artistically handed as well as skilfully played. Consciously or unconsciously, our sense of harmony is satisfied, instead of being jarred or irritated as it must be with an ungainly performer.

The exercises for pedal practice are given in response to frequent applications to me for such assistance. Fig. G will, I think, be found very useful in securing independence of the lower extremities, and Figs. H, I, J and K will be instrumental in the acquirement of strong supple ankles.

ANNA LEFFLER ARNIM.

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# Preface to First Edition.

The author presents the following pages to all practical lovers of music, either amateur or professional, in the firm conviction that it will prove of great assistance in rapidly perfecting them in the technique of instrumentality.

Although avowedly written for students of the pianoforte; it is in reality adapted in an equal degree to the requirements of every other instrumentalist, inasmuch as all instruments are played by the hands, and for all the same qualities are requisite in a greater or less degree. Hence Violinists, Flutists, and all players of Reed and Brass instruments will find useful hints in this little book, and each will speedily learn to select those manipulations most suited to his special requirements.

Every care has been taken to render the explanations accompanying each figure distinct and intelligible, so that by attentive perusal of them no mistakes can be made. Should it, however, happen that in spite of this a doubt remained in the minds of some, the author is willing to give a practical illustration of all or any one of the manipulations on which uncertainty exists.

A. L. A.

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# Introduction.

To be an accomplished performer on the pianoforte is, as most persons know who have turned their aspirations in that direction, no easy task; and we think if it were possible to make ourselves acquainted with the facts, we should find that out of every twenty persons who began by being fully determined to become a virtuoso, only two on an average persevered until they reached the summit of their aspirations.

The truth is, there is no single thing in the Fine Arts which so determinedly monopolises the time and attention of a student, as does the subject of our discourse; perhaps we may except violin playing, which equals if it does not exceed it.

In the life of a girl who aspires to do great things on the piano, everything must become subservient to, and controlled by, the imperious demands of the "instrument." First; time is

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required: years and years of patient plodding and practising for hours and hours a day. Secondly; the hands must be employed in few, if any, of those feminine duties of home-life which are the pleasant tasks of all girls. The fear of rendering the hands stiff or clumsy, causes them to be retained almost wholely and solely at the services of the exacting deity.

Thus it is, that many girls who are not able to devote three-fourths of their lives to the practical study of the pianoforte, finally are compelled to acknowledge, that, with the best of wills, and the closest of study, their performances will never be of a kind to support the strong glare of public criticism; although they may be very fairly adapted to the less severe scrutiny of a drawing-room.

Some again lack perseverance and patience. These two virtues must ever attend closely upon the pianoforte student, if he or she wishes to gain proficiency in the Art. Seated lovingly hand in hand they must be present at those eternal repetitions of "scale exercises" and "finger studies." Hour after hour they must be repeated; the same uninteresting accumulation of sounds which are not even always

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harmoniously blended. Pianoforte Exercises for the wrists, for the fingers, to acquire the shake, the sherzando, the individual action of the fingers, and what not. On, on, with a patience and perseverance worthy of—sublime things we were going to say. But music,—good music *is* sublime. It is the key which unlocks many a hard and obdurate heart, and discloses the gushing spring not discoverable in the arid barren exterior. It stirs the emotions in man, and brings to light the better side of his nature. It humanises the mass of the people, and attracts them to love that which is good. It opens their eyes to the beautiful, and instils the desire of adoration. As a people are devoid of music, so will it be observed they are devoid of morals. As the love of music increases in them so will vice proportionately decrease. It is a blessed Heaven-sent gift, which has a far higher meaning and power than that of affording a passing gratification to the sense of hearing. It is food for the soul, and once accustomed to a little good music periodically, the mind unconsciously languishes if deprived of it, and the every-day duties are carried on in a listless manner, owing to the absence of its magical influence.

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The great composers of the past, who have left such legacies of incalculable wealth behind them, were hardly themselves aware of the power for good they were transmitting to posterity in the form of yellow sheets of MSS. covered with lines and dots. We say "to posterity," for too frequently the contemporaries of a great composer are none the better for his labours. It is only when his ashes have long mingled with the dust in some obscure spot, that he suddenly rises again into brilliant existence through his works; and the name of the man in the nameless grave, becomes known far and wide, even in the remotest corners of the civilised world.

It is not wise to speculate upon these matters, else it would be satisfactory in the extreme to be able to think that, though not with and amongst us, these great and gifted men were yet able to see the present results of their long, toilsome, and unappreciated labours, from the far-off region where they dwell in the Spirit. If we could feel certain that such were the case, we might be less inclined to blush at the narrow-minded obtuseness of our forefathers, which a century ago permitted men to starve, who in the present time would be fêted,

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courted, and worshipped, as Talent always does worship Genius.

But we are drifting away from our subject, to return to which:—Some students, from a lack of strength, have entirely to forego their wishes and aspirations. Pianoforte playing is very arduous work, and the strain which is put upon the ligaments of the wrists is often too much for them, and their powers succumb in consequence.

People suppose, and suppose rightly, that the way to strengthen the muscles and ligaments of the wrists is to give them plenty of exercise. But here, as in almost everything, there is a reverse side of the picture. Exercise, proper in quantity and quality, does undoubtedly, in fact is, the one way of strengthening joints, ligaments, and muscles, as we shall prove; but in pianoforte playing it is almost always carried to excess; and so, instead of strengthening them, the over-exertion of the muscles and ligaments disturbs the harmony of the mutual relationship between their component tissues; and a painful strain, or partial paralysis, with, in some cases, atrophy of the muscles is the result.

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This, to those at all acquainted with physiology, is perfectly clear. It will be seen, on referring to the description of the muscles, &c., of the arm and hand, that the wrist is a small but must important intermediary between hand and arm; and it is not only the narrow passage whence the long muscles are carried across to the hand, but it is the spot upon which numbers of the short muscles running along the hand take their origin, all of which are held in position by strong, though exceedingly thin, fibrous ligaments, which are attached to the carpi (or small bones of the wrist), muscles, &c., in all directions. And if the hands, being in such intimate connection with the wrists, which are surrounded by such delicate ligaments, are unduly and excessively exerted, and the muscles in consequence overstretched, as is for instance often the case in some of *Morceaux Brillantes*, of Chopin and Liszt, is it to be wondered at that, so far from strengthening the frail wrists, these difficult studies are just the very things that exhaust their power and leave them weakened and sprained? No: the wrists should be strong when we come to the piano. We should not expect to gain there what ought to be brought with us. And circumstances are just so awkwardly placed that the very pursuits or

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occupations which might be calculated to assist in strengthening the fibres of the wrists, are mostly condemned, on the plea of their lessening the pliability of the fingers.

Sprained wrists are mostly prevalent amongst lady artistes; men, as a rule, have larger, conciser, and more firmly-built wrists than women; and to this principally, as well as to the larger degree of power in the arms, may their—in most cases—superior manipulation of the instrument be attributed.

It may of course be disputed; but, in our opinion, the pianist will seldom, or never, attain that grand ease of manner which characterises the performances of some of our most prominent instrumentalists, unless confident of possessing an ample fund of real physical strength in reserve, which can be drawn upon at will, and, what is more important, which can be *modified* at pleasure.

Observe the difference between a *fortissimo* rendered by one who is conscious that he has not called forth the full extent of his powers; and in the same interpreted by one who has to bring the

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sum total of his forces to the foreground, and then gives them with an effort which has deprived them of the influence of control? The one we might regard as commanding the instrument; the other as being subservient to it.

Therefore, we think that most persons will agree with us in not looking lightly upon the matter of strengthening the arms and wrists, for it is the true and solid, though hidden, foundation upon which the lighter and airier fabrics of piano-forte playing, and all appertaining thereto, must be built; as far of course as refers to the technical portion of it.

The object of this book, however, is to banish a great number of these obstacles from the student's horizon, and to reduce the difficulties which beset him on all sides to a minimum; although for the aspirant to musical fame there will still remain a wide field for the practice of the two virtues we have named above.

We are mostly inclined to hope that to the great numbers of amateurs who at the present day learn music as a pleasure and a recreation, this

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book will prove singularly useful; and that instead of being less than indifferent performers upon the pianoforte, many of them will, through the hints contained in it, become very fair, if not thoroughly proficient ones.

Music is an art which cannot be too much encouraged; and it is particularly agreeable if one or two members of the home-circle are able to enhance the pleasures of the evening by the tasteful rendering of a little good music, without break-downs, slurs, and the painful drowning of mistakes by the plentiful use of the pedal, and the angry growl of the bass.

But whence does this arise? Why should we be always encountering break-downs and the host of other disagreeables, until we almost make a vow to "give it up and have no more to do with it?"

The reader will know it well enough. More practice is necessary. And more practice, under the circumstances, perhaps, of a busy life with daily duties of a widely different nature, is out of the question. The piano is for such persons, an evening, an after-

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work recreation, and in consequence of the deficiency of practice time, the student is discouraged, and often allows a wholesome and elevating pleasure to dwindle into neglect and gradual disuse. Theory, may be studied in the abstract; but to render the fingers strong and lithesome, nothing but hours and hours of practice seem to avail.

This, not one out of a dozen are able to devote to it, and the result is, as we have said, either painfully indifferent playing, or no playing at all. Now we guarantee the reader, that if our finger gymnastics are properly and conscientiously performed, for but twenty minutes a day, divided into two sets, each of ten minutes' duration, *it will be possible by one hour's practice on the piano to effect more, than by four hours' practice without their use.*

And let it be remembered that the exercises can be practised almost anywhere, and almost under any circumstances, quite independently either of the keyboard, or of any apparatus whatever.

The peculiar difficulties which attend pianoforte playing, arise from the singular way in which

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strength must be located along the arm, wrist and hand. As we have before observed, strength is the foundation upon which the subsequent qualifications of the pianoforte must be reposed. These qualifications we will now endeavour to put before the reader as we ourselves understand them.

Whilst the strength and power necessary for fulfilling the ordinary vocations of life,—such as working, playing games, painting, gardening, duties of the toilette, in fact all of those actions which come under the list of subjects in life's daily routine,—is mostly gained by the use of the muscles of the arm, wrist, and hand *collectively*, each in a manner supporting and dependent upon one another; it will be observed that in pianoforte playing, this rule, or custom, no longer holds good. And thus it is that when the pupil is first seated at the pianoforte it becomes next to an impossibility to do such a simple thing as to pass the thumb under the other fingers, without performing the queerest evolutions with the elbow.

In this collective use of the muscles,—where really there ought to be, if not just individual, yet localised power centred in them,—lies the kernel of

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the difficulty. For, although most of the tendons the hand are continuations of the muscles of the arm, and undoubtedly derive their strength from them, yet the hand must learn to act from the wrist, and quite independently of the arm in its evolutions upon the piano. The fingers again must gain the maximum of individual power independently of the hand. Yet in each spot strength must be located, or else unconsciously it is borrowed from another part and causes impediments in playing.

There is another thing which we must not omit to mention. We have alluded to the short muscles of the hand.* These are most important auxiliaries of the pianist. They have each their distinct duty, and each one is deputed to move the finger to which it is attached in a different direction.

Short muscles also form the fleshy portion of the hand and the ball of the thumb, each of them having a separate and distinct use.

Now in pianoforte playing very much depends upon the latent powers of the muscles being drawn out, and in their being encouraged to act independently of one another, as far as is consistent with the

* See Chap. IV.

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anatomical laws; and it is to effect this, that in lieu of a better method, the pupil has been hitherto compelled to devote the hours and hours to practising which are considered indispensable for the attainment of any standard of excellence.

The greater part of piano practising is *de facto* nothing more than a means—and a very roundabout one too—of strengthening the hands and wrists (when it does not injure the latter), and mobilising the fingers. It is a clumsy as well as a roundabout method, for the pupil has to pass through many imperfect evolutions before arriving at the perfect one. For instance, how often does not a pupil perform an exercise on the piano for producing flexibility of the hand, with the wrist held stiff and rigid, before the movement is satisfactorily acquired? And this not from lack of intelligence to comprehend what is required, but purely from want of *local power* over the muscles. And what patient plodding do not the *shake*, the *tremulo*, the *turn*, &c., call for.—Why?—Simply because the muscles which move the fingers from side to side are now for the first time being called into action independently; and decidedly difficult work it is for them to get on at all, especially

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those of the third finger, which have hitherto led a very idle life, either doing nothing at all, or just moving, when they could not help themselves, in company of the tendon of the long muscles to which they are attached. So that if the shakes, &c., &c., are done at all, it is by the help of what we are inclined to term *borrowed strength*—where one muscle seeks the assistance of another at its duties.

The exercises which we submit to the student will be found valuable in many ways; but in none more so than in the manner by which each part of the hand, and even of the fingers, may be strengthened locally,—the action of the movement being concentrated upon the spot.

In spite of all the pianoforte practising, however diligently it is pursued, almost all persons, whose opinions in this matter carry weight with them, agree that these means often fall far short of providing us with the requisite degree of technical excellence, especially where the student has not begun to study very early in life, if not almost in infancy. Various also have been the means to compensate the want. The remedies applied have, however, often proved worse than useless—they have

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proved injurious, because their application was never guided by anatomical and physiological laws to regulate and control their actions.

It must not be thought, however, that our meaning as regards pianoforte practising is that the latter might *altogether* be discarded; and that, by using these movements, the necessity of practising scales, études, &c., &c., will be entirely obviated. Such an idea never occurred to us. The pupil will still have to practise diligently, but will have the satisfaction of seeing a more satisfactory result from his practise, if accompanied by the use of our exercises. And we repeat, that twenty minutes devoted to those, in two separate divisions of ten minutes each, and one hour's practising, will be more than equal to four hours' practising on the pianoforte alone.

Neither will it be so absolutely imperative to guard the hands from being engaged in any of those useful duties which might, under other circumstances, render them somewhat stiff for playing. The passive finger manipulations are most admirably calculated to mobilise the fingers when they are at all inclined to withdraw themselves from proper control. Indeed we should always advise students to go through them previously to seating themselves at the piano.

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It will be observed that we have divided the exercises into three classes: Active, Duplicate and Passive.

The Active exercises act more especially upon the muscles collectively; and those which we prescribe, are particularly useful in strengthening the muscles of the fore-arm, in solidifying the structure of the wrist, and in rendering it firmly knit and compact,—also in strengthening the muscles and tendons of the hand. They will be found of particular service to those suffering from weak wrists and hands, also to those who find it a difficulty to hold the arms at the proper elevation.

Care must however be taken in practising these exercises to attend to the rules and directions given in connection with them.

The Duplicate exercises— so called because they can only be effected by the working of two opposing wills, the one acting, the other resisting—are extremely useful in producing a *local* effect. Thus, in wholly active exercises it is very difficult, in fact, impossible, to act upon any muscle individually, and exclusively of the surrounding ones. The

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Duplicate exercises, however, are just adapted to do this, and by their use in the various positions, the action of the movement can be most effectively localised.

In fact, these finger manipulations are but a modification of Ling's System of applied movement, only in the particular use we make of them here, the hands are utilised to apply the necessary resistance one to the other, and represent the part taken by the Operator in the Curative Gymnasium when the Duplicate movements are applied to the other parts of the body.

It will be observed that in most of the Duplicate movements the hand and arm, or the arm alone, is shown as resting upon a flat surface—usually a table. In this way, only, is it possible to attain the full effect of the movement upon each local spot. Thus in *fig.* 14, where the movement is applied to strengthen the muscles upon the anterior surfaces of the fingers, its effect is considerably heightened by the position of the arm and hand, where the palm is firmly retained on the table, and the movement localised between the spaces contained in the first joint of the finger and its tips.

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In beginning to practise these movements, it will be very necessary to observe that they should commence in an extremely gentle manner. The student will gain nothing by hurrying, and by trying to put the fingers through strong manipulations under the erroneous impression that they will gain in power more speedily. The resistance applied must be at first quite small, in fact it should scarcely be felt; it can then be gradually intensified as the part becomes stronger and more accustomed to the exercise.

These Duplicate exercises will be found valuable auxiliaries for acquiring a light, pliant, yet firm and precise touch.

We think that *figs.* 14, 15, 18 and 19 in the Duplicate exercises, and *figs.* 22, 23 and 24 in the Passive ones, will prove particularly useful in this respect; but the student will soon recognise those which will do him the most service, and are more especially adapted to his requirements.

The Passive manipulations are those which are applied by one hand to the other, the latter being in a state of entire passivity. They are mainly

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useful in rendering the fingers lithesome and the joints mobile. They are of two kinds—rotations and flexions. Rotation is applied where the joints admit of it, as, for example, the first finger-joints; the flexions where they are only moveable in one direction, as in the second and third joints.

The rotations should be commenced in small ratios and gradually increased in diameter; the hand must be perfectly passive during the proceeding. The latter rule must also be observed during the flexions.

Anybody practising the Passive finger-manipulations, alternately with the Duplicate ones, observing the rules laid down for them in each case, cannot fail to note the marked difference that will result in the capabilities of the fingers after a few applications of them—a difference that is scarcely credible; the fingers will be lighter, have more delicacy, daintiness, precision and spring. It will be felt that they are under much better control, and that the tendency which exists sometimes in them to be laggard or heavy, will soon be a thing of the past.

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# Exercises.

## CHAPTER I.

The movements, as we have already intimated, are divided into three classes :—

ACTIVE, DUPLICATE, AND PASSIVE.

The Active are those which are carried out without the intervention of an opposite will or force. They influence the muscles of a part collectively, and strengthen the tendons and ligaments. The directions given with each of the movements should be read attentively two or three times, and the movement itself practised in strict accordance with the rules.

The arm movements which follow are mostly for the purpose of strengthening the arms and wrists, and for rendering the structure of the latter consolidated and firmly knit. Let no one, however,

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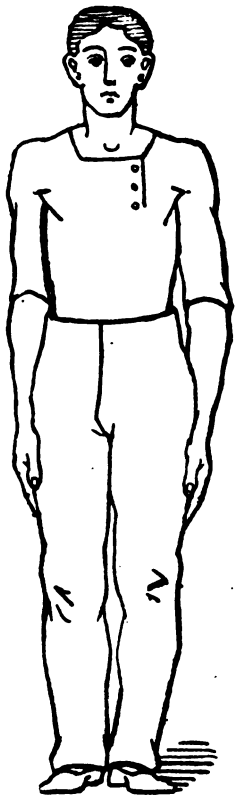
fear that the wrist will become *stiff* from using them.



* Fig. 1.

A wrist may be both a model of strength and suppleness. The two qualities are by no means incompatible.

*Fig.* 1 represents the primary position from which all the arm exercises are performed, the toes are apart, heels together, and the body and head firm and erect, with the chest out. The arm and hand to be stretched to the very finger-tips, and should be as one straight consolidated piece from the shoulder downwards. Particular care should be taken not to bend the wrist.

*Fig.* 2.—From the previous position the arms are brought to the position at **A**, whilst the hands are doubled into fists, as shown in the engraving.

From this position the arms are stretched out **B**, with the fingers straightened, in a line with the

* See Rule 7.

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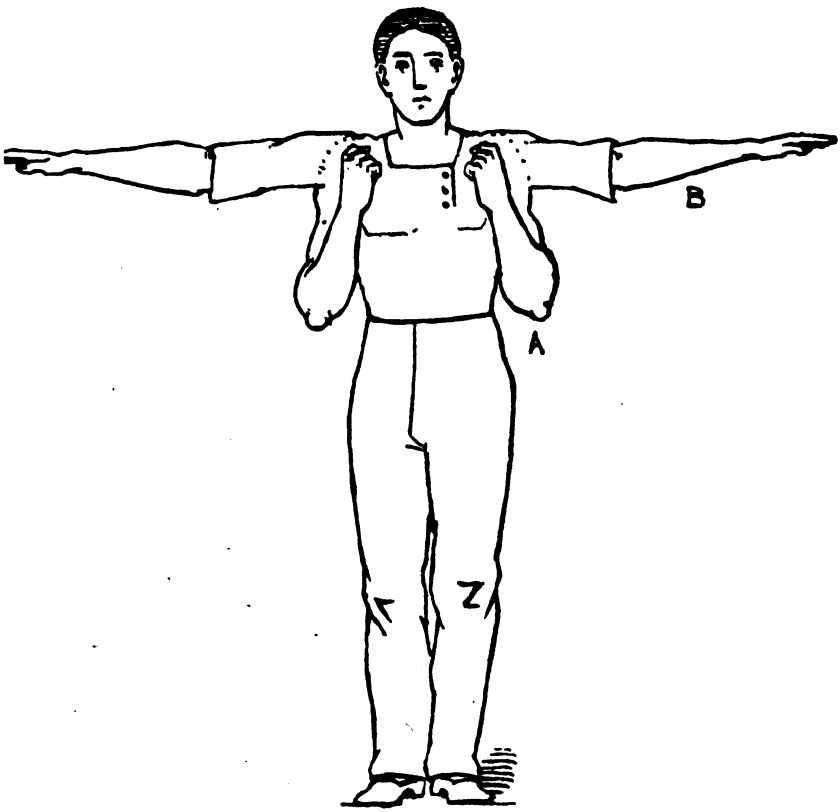
shoulders; the movements **A** and **B** alternately repeated three or four times, terminating in position **A**, from which the primary position (*fig.* 1) is resumed.




* Fig. 2.

The action of this exercise is twofold—on the muscles of the fore-arm, and on the wrist. It should

* See Rule 7.

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be begun gently, until the arms and wrists are accustomed somewhat to the novel positions; but it must be remembered that its real efficacy will rest in the energy and vigour with which it is subsequently carried out. When assuming position **A** (*fig.* 2) the hands must be brought up vigorously, and the fingers doubled up into so SOLID a FIST that the wrist is felt to swell; then as STURDILY THRUST OUT with the fingers straightened. By these alternate movements the muscles are placed in two situations—that of contraction, and that of extension.

The wrist must not be bent during the exercise.

This exercise may be performed with one arm at a time, the other reposing upon the hip, as shown in *fig.* 4.

It will be found of service to persons with weak wrists, and arms which are easily fatigued.

*Fig.* 3.—From the primary position the fists are doubled, and whilst one hand is firmly pressed down at the side of the body, the other is SLOWLY and EVENLY RAISED to the position shown in the engrav-

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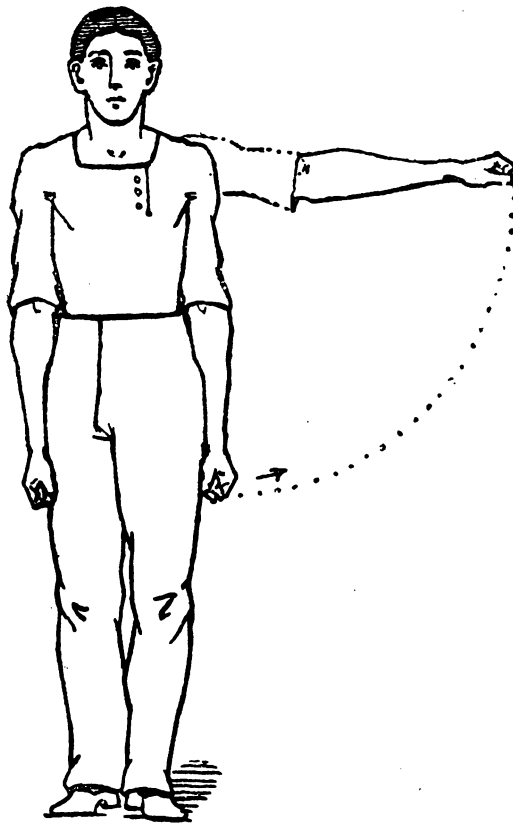
ing. After resting thus for a few seconds, it is made to descend in the same manner.



* FIG. 3.

This movement is repeated alternately with the right and left hands, twice or three times according to the strength of the student. The fists must be

* See Rule 7.

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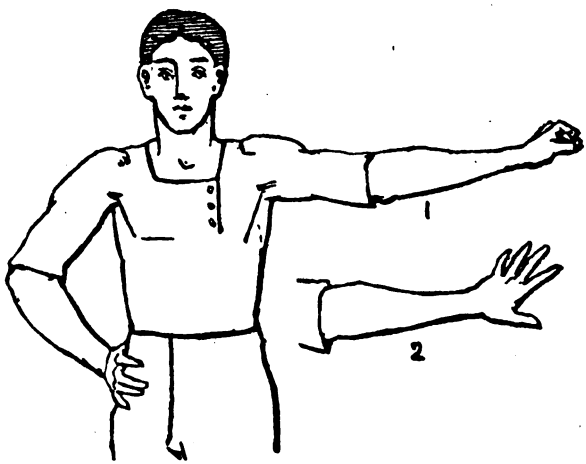
very FIRMLY DOUBLED, and the muscles of the arm well STRETCHED from the shoulder downwards. Whilst slowly raising, the action should be felt all along the back of the arm, also over the wrist and hand.




* FIG 4.

*Fig.* 4.—This is a very effective movement for the arms, hands, and wrists. If properly practised it ought not to be repeated more than three times with each hand at once.

The engraving shows us the student with the right hand upon the hip, the left arm firmly extended with the hand doubled into a fist; the

* See Rule 7.

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fingers are then opened with ENERGY, but rather SLOWLY, until they are thrust out to their full extent; whilst the back of the hand is slightly raised nearer the arm, *without* altering the position of the latter or moving it in any way, the hands are made to open and close thus two or three times; the movement is then performed with the other hand. The whole of the muscles of the fore-arm take part in this movement. It is, however, especially effective for strengthening the wrist and palm of the hand.

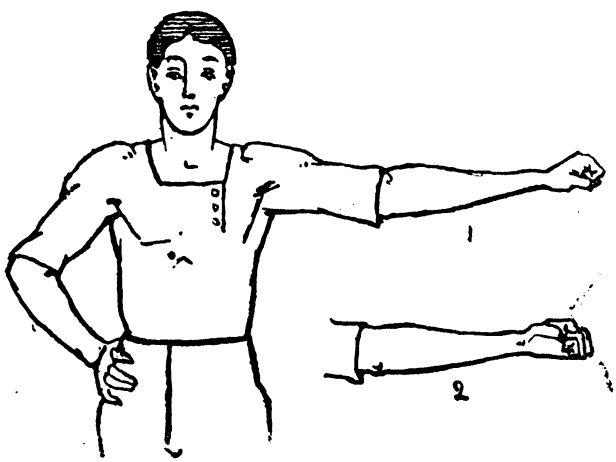


FIG. 5.

*Fig.* 5.—The same directions relative to the stretching of the arm, and firmness of the wrist, as were given in the previous exercise, apply here.



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From the position 1, the fore-arm and fist are SLOWLY TURNED, so as to bring the reverse side of the latter uppermost, into position 2. Positions 1 and 2 are then alternately assumed for two or three times, terminating upon position 1. Repeat with other hand.

This movement is for strengthening the fore-arm and wrist.

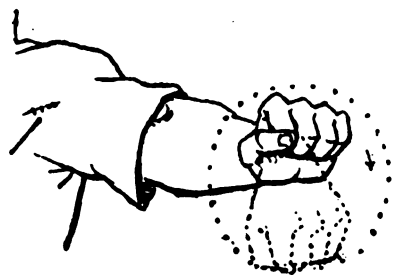

FIG. 6.

*Fig.* 6.—The position to be assumed whilst practising this exercise is similar to that in *fig* 5, position 1, with this important exception: the arm must be firmly stretched *down to* the wrist; but the hand doubling itself into not *too* tight a fist, must be ROTATED from the wrist in as large ratios as possible,* WITHOUT altering the position of, or in any way MOVING the arm.

* See Rule 6.

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This exercise will be found rather difficult to practise at first; but we advise the student to give it best attention, as it is invaluable in securing mobility of the wrists, *together* with power in those muscles where it is most required for keeping the arm at a proper elevation from the piano.

If performed accurately, the action of the muscles will be most felt at the back of the arm, just about the wrist.

We may mention that the best way of stretching the arm is to imagine one is endeavouring to lengthen it by an inch or so.

We must also caution our readers against venturing upon this movement before the wrists have been well strengthened by the exercises previously given, and by the two following, especially if weak wrists are a characteristic.

*Figs.* 7 and 8 are intended for use *previously* to *figs.* 4 and 6. When the ligaments of the wrist are very fragile, it will be better for the student to strengthen them first in the manner shown in the engravings: viz., by placing one hand round the wrist of the other, and giving therewith a

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firm equable support whilst the rotation is being performed.* The same applies to *fig* 8. The hand

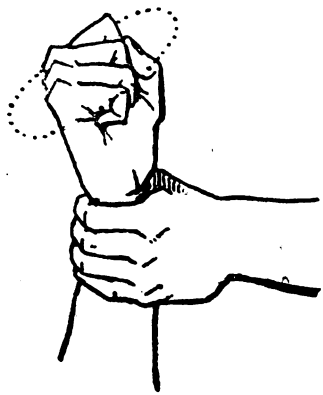

FIG. 7.

FIG. 8.

being opened and closed with vigour, whilst the wrist is grasped by the other hand.

When the wrists feel stronger, the more effective exercises—*figs.* 4 and 6—may be safely practised.

Those already possessing strong wrists may omit *figs.* 7 and 8.

*Fig.* 9.—This exercise may be performed in almost any position in which the hand can be

* See Rule 6.

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held with the tips of the fingers pointing upwards, as shown in the engraving.

FIG. 9.

The hand and fingers should be as a firm immoveable piece, the thumb alone being first BENT at RIGHT ANGLES, and then straightened and STRETCHED away, as shown.*

Its primary object is to strengthen the thumb joints, in which it is very effective if performed conscientiously and SLOWLY: it also acts in a strengthening manner upon the extensors and the short muscles of the thumb. Care should be taken when bending the thumb to keep it close to the hand.

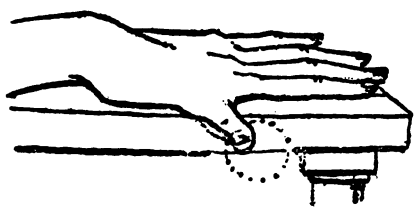

Fig 4.

FIG. 10.

*Fig.* 10.—Should be performed in the following manner. The fore-arm, hand and fingers to repose flatly upon the outer edge of an even surface—say

* See Rule 6.

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a table—with the whole of the thumb free. The latter is then ROTATED, but is retained in a straight position; the rotation being at the joint formed by the metacarpus of the thumb and the wrist, for the strengthening of which it should be practised.

NOTE.—When the student possesses sufficient control over the muscles, this movement may be performed with the hand in the same position as in *fig.* 9. If then the hand be kept immoveable, and the action confined solely to the thumb, its effect will be even greater than when performed in the other way.

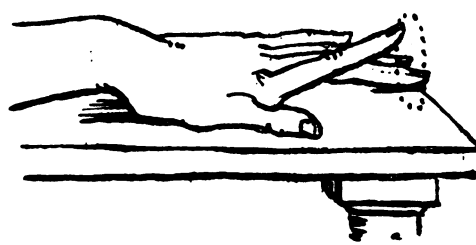

FIG. 11.

*Fig.* 11.—The fore-arm, hand and fingers are laid firmly and evenly upon a table, the latter being slightly apart from each other. The fingers are then each ROTATED singly, WITHOUT RAISING the others at all and without bending them. If this rule is not well observed, the object of the exercise is frustrated.

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The engraving shows the movement when practised with the first finger—this is the one by which it will be effected with the least difficulty, as most students will be aware; the middle finger coming next in order, while the third and little fingers are the most difficult of all; and it will be found anything but an easy task to retain the other fingers in situation during the rotation of them. The very irksomeness of the exercise, however, proves the necessity that exists for it, and therefore it must be practised with PERSEVERANCE. The student should begin first by raising the finger from the table; then to try and move it to and fro, afterwards to rotate it; never mind how small the ratios. Beginning thus, the student will be surprised to find how soon the difficulties of the exercise will be mastered.

Care must be taken never to relax the position* of the hand—the student cannot be too particular in this respect.†

This exercise strengthens the first finger joints; it also secures individual power and strength to each of the fingers independently of the hand.

* This exercise will be found easier to perform after having gone through the Duplicate finger movements.

† See Rule 9.

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## CHAPTER II.

We now come to the Duplicate exercises; so called by reason of their being effected by the intervention of an opposing force, which, in the instances in this work is applied by the other hand. In Duplicate exercises the action is directed to a particular part, or even to a particular muscle, in accordance with the position assumed during the movement, and the manner of resistance applied.

FIG. 12.

*Fig.* 12.—The fore-arm and wrist are placed upon the table, with almost the whole of the hand abutting over the edge. The hand, which with its

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fingers must be kept perfectly stiff, is then raised in position **A**, from which point the movement commences. The fingers of hand **B** are placed across the fingers and a portion of the palm of hand **A**. The latter then, keeping perfectly straight, commences to PRESS DOWNWARDS. Hand **B**, however, applies a resistance which is to intensify the action of the muscles of hand **A**. The two hands thus DESCEND until hand **A** is on a level with the arm; hand **B** remaining beneath the whole time. The movement is then REVERSED, without changing the position of the hands one towards the other, thus: hand **B** now presses hand **A** upwards, whilst the latter offers the resistance. The movement is then repeated over again.

The student is particularly requested to read the rules 4 and 5 attentively, and carry them out during this movement.

If the wrists should be stiff, they must NOT be FORCIBLY bent back, else there will be a strain felt upon them which should not be the case. Practice will also soon teach the student to apply the resistance, as well as to modify and intensify the amount of it, at will.

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This movement strengthens the flexors of the hand and arm, it also acts in a particularly strengthening manner upon the inner part of the wrist, and on the short muscles of the palm of the hand.

In the commencement it should be performed once at a time; later, when the student has mastered it, it may be repeated three times successively, but never oftener.

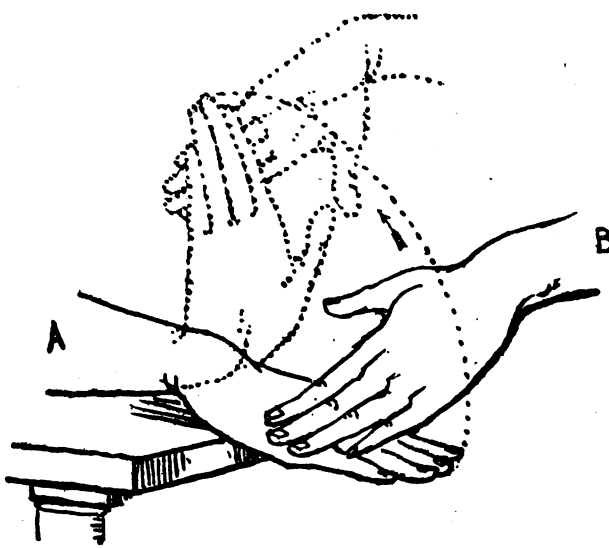


FIG. 13.

*Fig.* 13.—This figure is the converse of the former one. The hand **A** is placed in precisely the same position upon the table, but the movement is

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commenced from another point. As will be observed in the engraving, the fingers of hand **B** are placed ACROSS the BACK of those of hand **A**; and whilst hand **B** offers a slight resistance, hand **A** is raised upwards in the direction of the arrow, to the position indicated by the dotted lines.

In descending to resume the first position, hand **B** presses upon hand **A**, whilst the LATTER offers the RESISTANCE.

This exercise strengthens the extensors of the hand and arm, it also acts in a particularly strengthening manner upon the back of the wrists. Care must be taken to confine the movement to the wrist of hand **A**; the latter being held like one immoveable piece; nor must hand **B** be removed from its position upon hand **A** during the whole of the movement; the only difference being the relations of the hands towards each other being, that whilst in raising the hand from the table, hand **A** presses and hand **B** resists,—in descending the contrary takes place; *i.e.*, hand **A** resists whilst hand **B** presses—proceedings which necessitate no alteration of position in the hands, but merely change of will in controlling the action of the muscles.

The student is referred to Rules 4, 5 and 9.

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*Fig.* 14.—The position in *fig.* 14 will be best understood by looking at the engraving. The fore-arm, hand, and all the fingers are placed upon the table; the latter being well straightened and slightly apart, should be permitted to just clear the edge of the table, so as to allow of the thorough performance of the exercise.

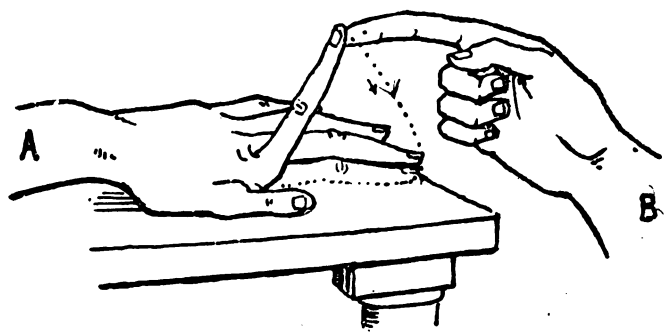


FIG. 14.

The fingers are then raised one by one, as shown in the engraving. Here hand **A** is in the act of pressing the first finger down upon the table in the direction of the arrow, meeting with resistance from hand **B**, the latter again pressing it upwards with the first finger, whilst the same in hand **A** offers resistance.

This must be successively repeated with each of the four fingers;* the first finger of hand **B**,

* See Rules 4, 5 and 9.

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however, always being utilised for the purpose of offering the necessary pressure and resistance.

The movement is for strengthening the short muscles lying along the inner surface of the finger. Its action should be confined to the space between the first finger joint and the tip of the finger. For this reason the PALM of the hand should be well KEPT DOWN upon the table during the movement of each finger, and the rest of the latter should also be strictly RETAINED in SITUATION; as only by being particular in this respect will it be possible to localise the movement. The finger acted upon must likewise be held straight, and bent at none of its joints.

Never mind if the movement is awkward and feeble at first, a little practice will soon render it easy to effect, and make the fingers stronger. Only, we repeat, NEVER RELAX in maintaining the proper position.

*Fig.* 15.—Here we have again the converse of the former exercise: nearly the whole of the description given in which will be applicable here. The fingers, hand, and arm are held in the same

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position upon the table, the fingers being equally as well retained in position. The only difference in the exercise—but it is a very important one—is, that the first finger of hand **A** is PRESSED UP in the direction indicated by the arrow, resistance being offered by the first finger of hand **B**; and in returning to the first position, the finger of HAND **A**

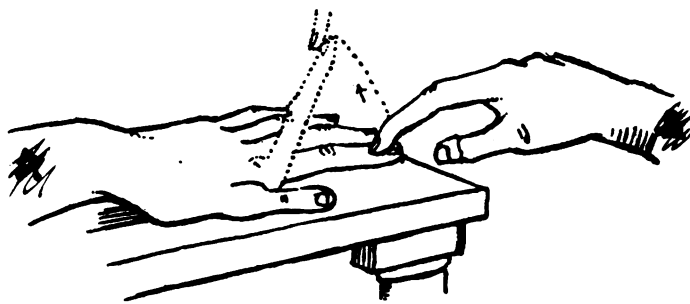

FIG. 15.

OFFERS RESISTANCE, whilst being PRESSED DOWN by the same finger of HAND **B**. The fingers are then successively made to go through the same proceeding.

It will at first be found difficult to perform this exercise whilst observing the proper position of the hand, especially with the third and little fingers. The student must therefore proceed SLOWLY and GENTLY, else he will tire the fingers without benefitting them. In the beginning he must be contented to raise the finger up a little way only,

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offering a very slight or no resistance whatever, but merely laying the finger of hand **B** upon it. If the student commence thus, he will be surprised to see how soon the resistance applied may be intensified and the fingers gradually become stronger and more capable.

This exercise strengthens the short muscles along the back of the fingers, from the first joint to the tip: the extensors being acted upon, but in a secondary degree.*

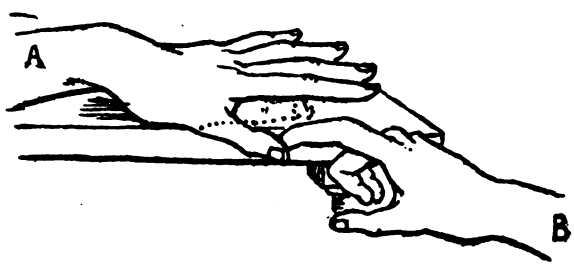


FIG. 16.

*Fig.* 16.—The fore-arm, hand, and fingers are placed upon the table, but in such a manner that the thumb of hand **A** clears the extreme edge. The first finger of hand **B** then applies a RESISTANCE to the inner surface of the top of the thumb, against which the latter PRESSES until it is as close to the

* See Rules 4, 5 and 9.

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rest of the hand as the resisting finger will permit it to advance. In returning to first position, the first finger of HAND **B** applies the PRESSURE, whilst the thumb of HAND **A** RESISTS.

The thumb should be carefully straightened during this movement, which is intended to act along the whole of the inner surface, and upon the greater part of the muscles of the ball of the thumb, also rendering them stronger in their attachments at the wrists.*

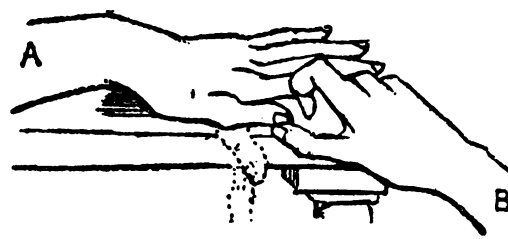


FIG. 17.

*Fig.* 17.—The position to be assumed is precisely similar to that in the previous exercise, with this difference,—that the movement commences with the thumb pressing *away* from the hand instead of *towards* it, as in the former case; and the resistance, as will be observed in the engraving, is applied by thumb of hand **B**, instead of by the first finger.

* See Rules 4, 5 and 9.

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The thumb of hand **A** then PRESSES AWAY from the hand to which it belongs, against resistance offered to it by the thumb of hand **B**; and, in resuming its former position, the thumb of hand **A** offers the resistance against the pressure of the thumb of hand **B**.*

The thumb must be kept straight during this movement; which is for the purpose of strengthening the outer part or back of the thumb, also for consolidating (but not stiffening) its relationship with the wrist.

This, as well as the previous exercise, should not be repeated more than three times in succession.

Subsequently hand **A** assumes the part of hand **B**, and *vice versâ*

*Fig.* 18.—The fore-arm, hand, and fingers (**A**) are placed upon the table, the fingers being slightly apart from each other: each of the latter is then taken successively between the first finger and thumb of hand **B**, and DOUBLED UPON ITSELF, offering no resistance. The finger is then stretched out straight in the manner indicated by the dotted lines,

* See Rules 4, 5 and 9.

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meeting, however, with RESISTANCE from the first finger and thumb of hand **B**. Thus the student will understand that in doubling the finger it is passive, —in straightening it is pressed out against the resistance offered.

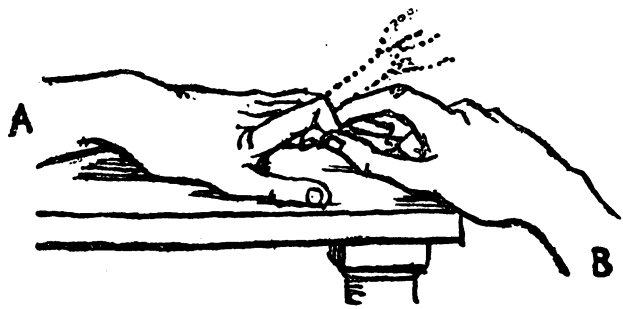


FIG. 18.

When the first finger has performed the movement, it must be straightened out upon the table, whilst the same process is being gone through with the second finger; and so on with each finger, the remaining ones being always KEPT STRAIGHT and FLAT.

This movement is adapted for strengthening the joints and ligaments of the fingers, and rendering them both powerful and elastic. It will be well, however, if the student defers the practice of it until the fingers have acquired some degree of strength and mobility through the other exercises,

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both Duplicate and Passive. If correctly done, this exercise will be found to have a particularly invigorating effect upon the fingers, imparting to them a degree of elasticity which is of material assistance in acquiring a firm and delicate touch. On that account it should be by no means passed over or negligently performed.

The resistance must be carefully and judiciously applied, so as not to tire the fingers.

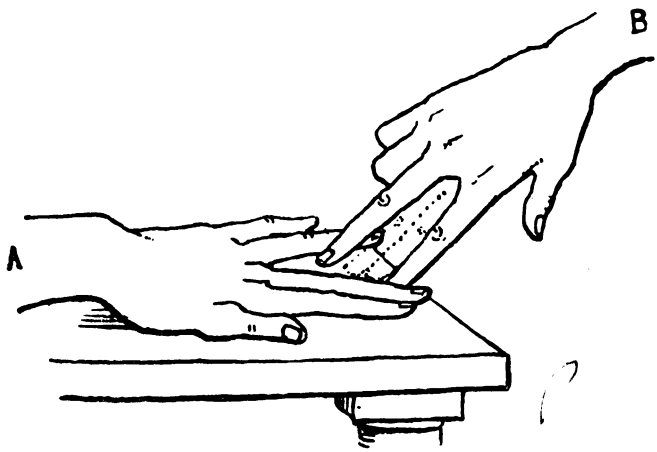


FIG. 19.

*Fig.* 19.—We come now to some finger movements, which are of the utmost importance to the pianist: viz., those for strengthening the small muscles lying along the sides of the fingers, by which many of the apparently insurmountable

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obstacles that beset the student's path may be overcome. We must bespeak the reader's attention whilst describing the movement.

The fore-arm, hand, and fingers of hand **A** are placed upon the table, the fingers being well apart and straight. The tips of the first and second fingers of hand **B** are then placed against the sides of the same fingers in hand **A**, at about the third joint. The latter then proceed to APPROACH each other, meeting with resistance from the fingers of hand **B** against which they have to press in so doing. In returning to position, the fingers of hand **B** SEPARATE, pressing in so doing against the two fingers of hand **A**, which offer resistance.

This pressing and resisting alternately must be repeated two or three times. The two fingers of hand **A** that are engaged in the movement must *alone* be moved, NO HELP from the remaining fingers being admissible. Thus, in the illustration, the example given shows the exercise when about to be performed by the second and third fingers. In approaching each other as we have described, the first and little fingers must remain immoveable, so

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that when the acting fingers have closed upon those of hand **B**, there will be an interval between them and the first and little fingers respectively. (Fig 19½)

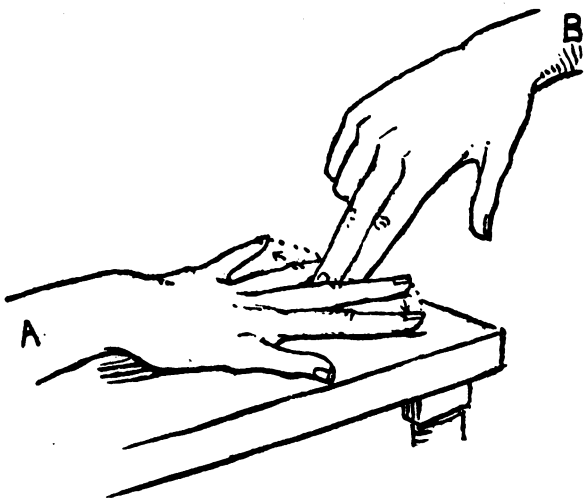


FIG. 19½.

It is of importance to be thus explicit, for unless these directions are observed, the main object of the movement—that of localising it to the sides of the fingers—will be frustrated.

When performed between the third and little fingers, the first and second must be kept well aloof, so that they do NOT ASSIST in pushing the weaker fingers as they are too apt to do if permitted.

The movement will be found rather difficult to perform at first, especially with the third and little

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fingers: indeed, the student will find that he has enough to do to keep the fingers in position; therefore very little or no resistance should be offered in the beginning, but must be gradually introduced as the fingers become more accustomed to the novelty of the position.

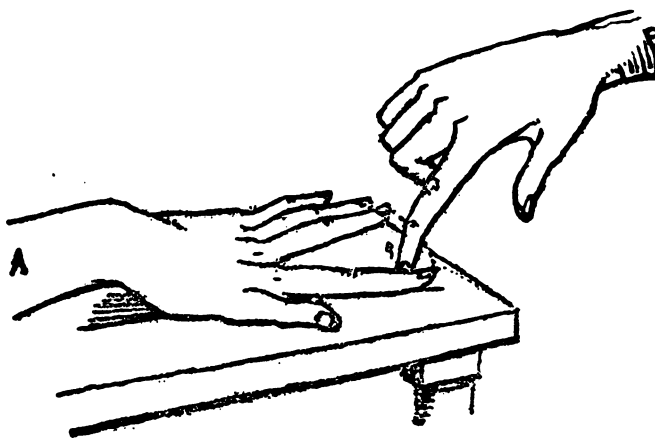


FIG. 20.

*Fig.* 20.—The fore-arm, hand, and fingers are placed upon the table, the fingers being moderately extended. The top of the first finger of hand **B** is then applied to one of the fingers of hand **A** at about the third joint. The acting finger of hand **A** then APPROACHES the others, meeting with resistance in so doing from the first finger of hand **B**, and pushing against it as shown in the engraving, by the

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direction of the arrow. When the finger is pushed as close up to the others as the interposition of the resisting finger of hand **B** admits, the return to the first position will be effected by the first finger of hand **B** pushing and the acting finger of hand **A** resisting, and so on.

This movement can be applied to any of the fingers on either side. It is especially to be recommended where a consciousness of weakness in any particular finger is experienced, also where the relative strength between the fingers is too unequal to admit of the proper performance of the preceding exercise.

Care must, however, be taken to proceed gently, and to desist for awhile as soon as slight fatigue in the fingers is felt.

Great attention must also be directed to the position of the fingers, which should be immoveable, with the exception of the one actually being exercised. But none should be raised from the table.

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## * CHAPTER III.

The rest of the exercises are PASSIVE MANIPULATIONS. Passive in so far that the hand about to be benefitted by their application is in a perfectly passive condition, and merely suffers the performance to take place, without in any way rendering assistance by the exercise of will.

The Passive manipulations are of great service in rendering the joints and ligaments supple and mobile, and coupled with the use of the preceding exercises to give strength, are calculated in the highest degree to put the fingers in splendid condition for the piano.

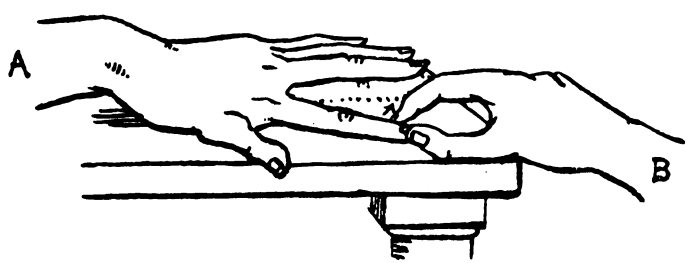


FIG. 21.

*Fig.* 21.—The fore-arm, hand, and fingers are placed upon the table. The fingers of hand **A** are

* See Preface to Third Edition.

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then taken singly between the first finger and thumb of hand **B**, and moved TO AND FRO as far as the communication between the fingers will admit of it.

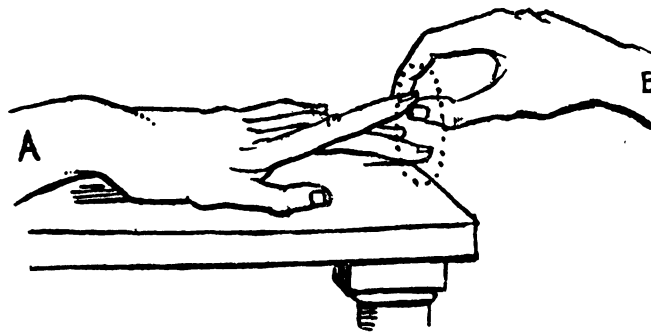


FIG. 22.

*Fig.* 22.—The fore-arm, hand and fingers are placed in the same position as in the previous exercise. The top of the fingers of hand **A** are taken one by one between the finger and thumb of hand **B**, and ROTATED in the manner shown in the engraving.*

Care must be taken to keep the palm of the hand in position, so that the rotation may be exclusively confined to the first finger joint.

These two movements are for mobilising and strengthening the first finger joints. They should be performed in alternation with the Duplicate

* See Rules 6 and 11.

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finger exercises; also immediately before repairing to the piano.

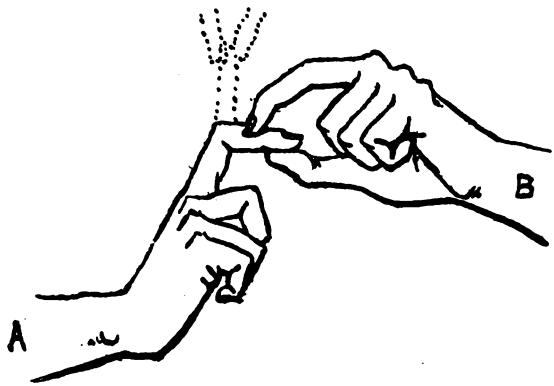


FIG. 23.

*Fig.* 23.—The hands are held in the relative positions shown in the engraving. The fingers of hand **A** are passive, and are taken one by one between the top of the first finger and thumb of hand **B** at about the third joint. The *second finger-joint* is then bent and straightened five or six times in succession.

Care must be taken to confine the action of this movement exclusively to the part it is required to exercise—viz.: the second finger-joints.

Hand **A** must remain perfectly passive, hand **B** performing the whole of the work of bending and

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raising the fingers of the former in succession. This will be observed by noticing the relative positions of the fingers in the engraving, as indicated by the dotted lines.

This movement mobilises the second finger-joints, and materially assists in connection with the Duplicate exercise, in acquiring firmness and elasticity of touch, and brilliancy of execution.

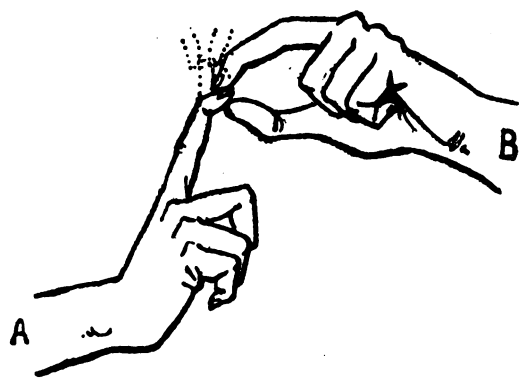


FIG. 24.

*Fig.* 24.—The hands are held in somewhat the same position as in the previous exercise. The fingers of hand **A**, being taken at the tip (on the nail and under), between the first finger and thumb of hand **B**, and bent and straightened at the *third* joint.

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The student, however, will find that the third joint cannot be bent at a right angle as the second one can, without causing the other finger-joints to bend also, nor must he endeavour to do so—it being anatomically impossible, from the manner in which the fingers are constructed. Therefore they should be slightly inverted, as shown in the engraving, and straightened, but never bent back beyond the vertical line.

Practised thus, this exercise will be found useful in further contributing delicacy and refinement of touch, assisting as it does in giving the student a great amount of control over the fingers in reproducing the higher emotions and the more subtle and rapidly changing phases of time and style often met with in advanced compositions.

*Fig.* 25.—The first finger of hand **A** is held at its third joint (rather nearer the nail and on the sides of the finger), between the first finger and thumb of hand **B**. The latter then proceeds to double it upon itself and straighten it out again. After having repeated this for five or six times, the same process is gone through with the other fingers in precisely the same manner.

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This movement is for mobilising the finger-joints collectively (*i.e.*, the collective joints of each individual finger) and is a good manipulation to use after the performance of the previous two.

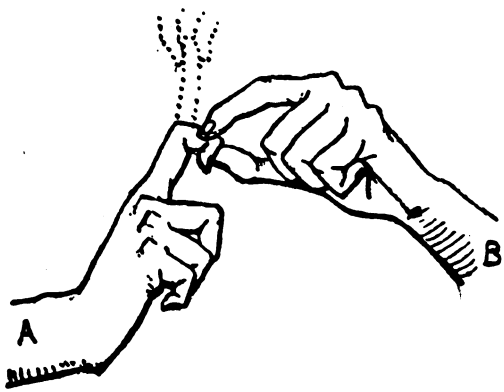


FIG. 25.

The student, however, is particularly requested to remember that these are *Passive* manipulations, and must therefore be effected whilst the fingers are suffered to remain in a passive condition.

## CHAPTER IV.

## ARM EXERCISES FOR VIOLIN PLAYERS.

### FOR LIGHT, GRACEFUL BOWING.

All these exercises with the exception of E should *not* be performed immediately before playing.

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It would be well if they were practised every morning and evening for ten minutes before a looking glass.

*Fig.* B.—The arm is extended sideways rather above the level of the shoulder (without raising the

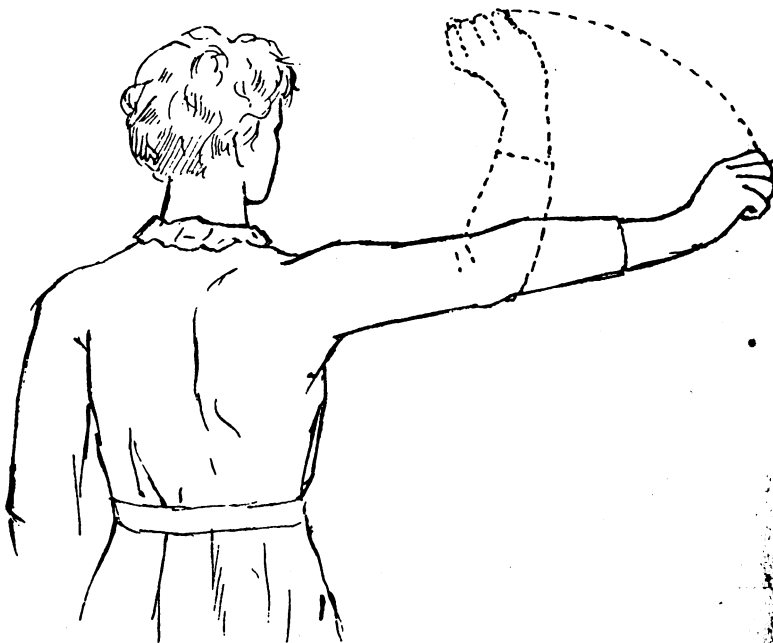

FIG. B.

latter). The upper arm is fixed; the lower bending back upon it in the manner shown in Fig. B dotted line. It will be seen that the fist is half closed and the hand is thrown slightly back upon the arm. This is to be repeated very slowly six times, and must be felt along the top of the upper arm.

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Great care must be taken to keep the upper arm fixed during the exercise so that it is neither raised nor lowered.

*Fig.* C.—Extend arm sideways with palm down rather above the level of the shoulder. Keep the

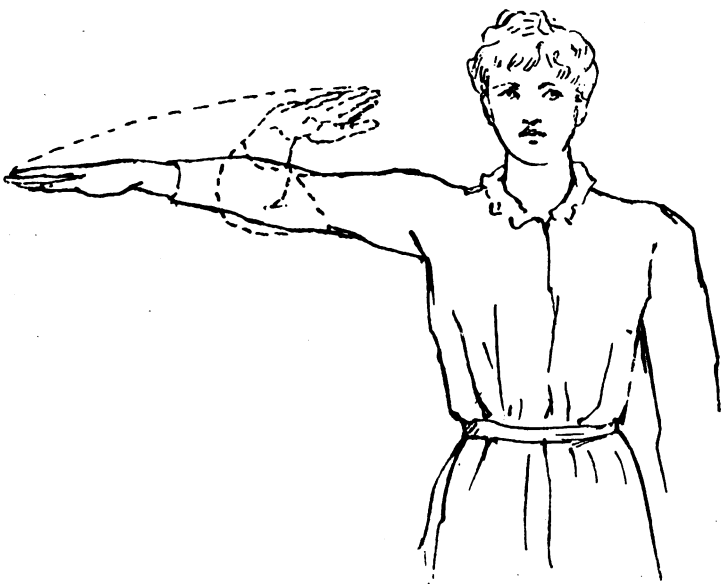

FIG. C.

upper arm fixed. Bend the elbow, bringing fingers to point forwards (Fig. C, dotted line). Straighten the arm again. Repeat six times slowly. In performing this exercise the pupil should *will* the forearm to be as light as possible. To be felt in the whole of the upper arm.



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Keep the upper arm well fixed, or the effect of the exercise is lessened.

*Fig.* D.—For securing ease and independence of movement in the arms: The left arm is stretched out in front, which is grasped and fixed just above

FIG. D.

the elbow with the right hand (Fig. D). The left forearm is then rotated from the elbow, as shown in the dotted line. To be repeated three times from left, three times from right. Make the circles as large as possible. Keep the upper arms fixed. To be done with both arms alternately.

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*Fig.* E.—For securing freedom in the shoulder joint, and independence of the arm: Square the right arm as shown in Fig. E. Keep it fixed at that angle. Now rotate the arm *without* raising the shoulder. The tips of the first and second fingers of the left hand

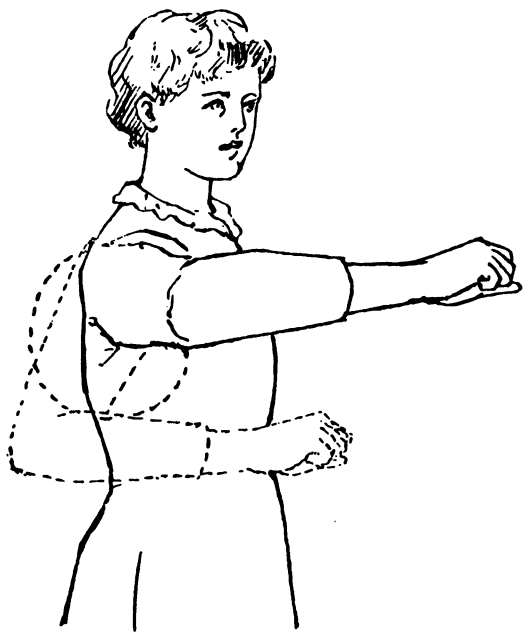

FIG. E.

may be held upon the right shoulder joint during this exercise. The movement between the joints will then be felt underneath the fingers.

Persons with stiff shoulder joints (and they are very numerous) will not at first be able to raise the elbow to the same level as the shoulder, without



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raising the latter. If this is so, the circles must be smaller until more free play is gained between the joints. Rotate both ways six times. Reverse arms and repeat exercise.

*Fig.* F.—For assisting in the rapid transition of the hand over the notes of the violin, independently of

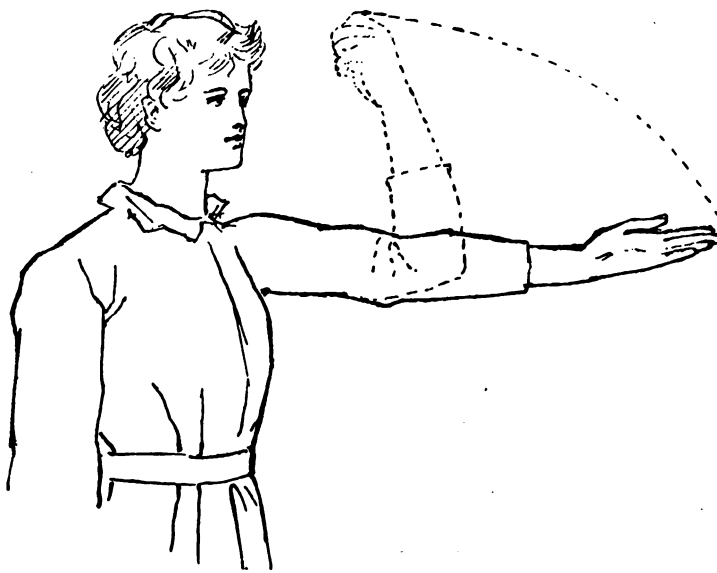

Fig. F.

the shoulder: The pupil must stand perfectly upright, keeping the shoulders straight and fixed. The left arm is then stretched out in front, palm upwards (Fig. F). The forearm is then bent upwards towards the left shoulder. The hand is closed into a loose fist and

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turned inwards as much as possible. This exercise, when correctly performed, will be felt all along the inner or palmer side of the arm, and in bending, the action will be felt most in the radial (or little finger) side of the hand, and all along that side of the arm to the elbow.

I have proved this to be a very useful exercise for securing independence in playing between the arm and shoulder.

Repeat three times very slowly, keeping the upper arm immoveable.

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*Exercises for Organ Practice.*

*Fig.* G shows an exercise for producing freedom in movement from the hip downwards. The pupil

FIG. G.

stands as in fig. G. The right leg is raised and kept well straight, but is not stretched too much. A rotation of the whole leg is then performed, the action

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of which will be felt under the hand on the hip. The circles should be small to commence with, and then, as more freedom is acquired, should be gradually increased

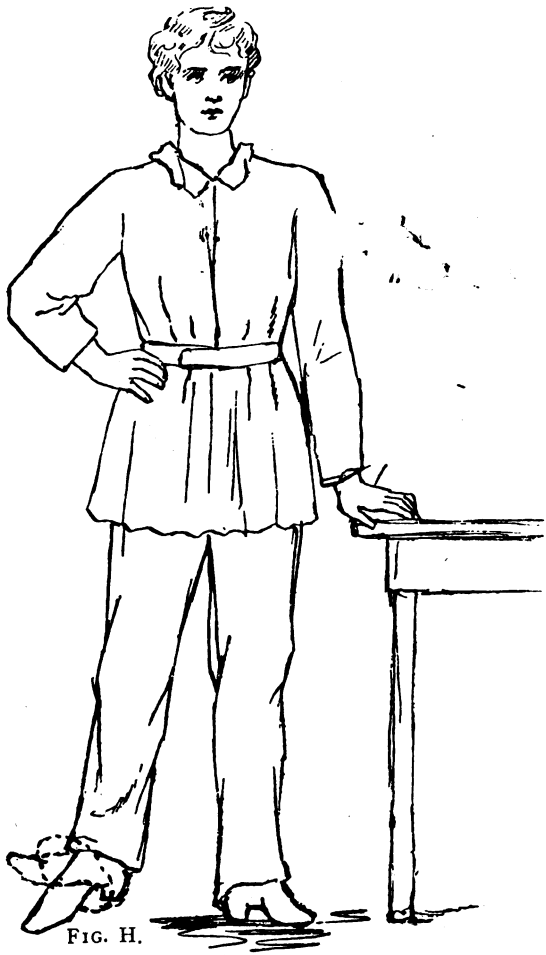

FIG. H.

in diameter. Should be repeated with each leg three times from left to right; three times from right to left.

*Fig.* H.—This is the same exercise so frequently

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shown in "Health Maps," and is for strengthening the ankle and rendering it supple. The pupil stretches the leg well down to the ankle, as though desirous of making the leg an inch longer. He then commences to *rotate* the foot, as shown in fig. H. The movement must be confined to the ankle, and if properly performed will be felt down the front of the leg and round the ankle. To be performed six times with each foot.

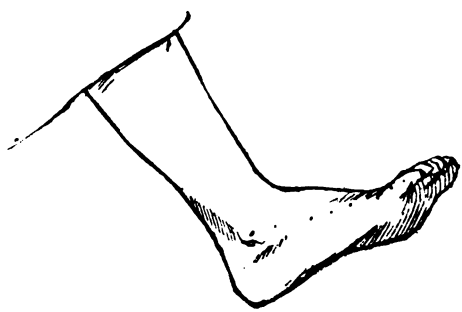

FIG. I.

*Figs.* I, J.—The pupil is in the same position as in fig. H, but stretches the leg, ankle and foot down to the toes. While thus he flexes the ankle outwards (fig. I), bringing the little toe as near as possible to the ankle (dotted line). The action will then be felt along the outer side of the ankle, extending up the leg. This is alternated three or four times with fig. J.

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*Fig.* J.—The position of foot is the same as in the preceding, the muscles being well stretched down to the toes. The foot is flexed inwards, the great toe joint approaching the inner side of the ankle (dotted line). The action will be felt all along the inner ankle and extending up the leg. To be alternated three or four times with fig. I.

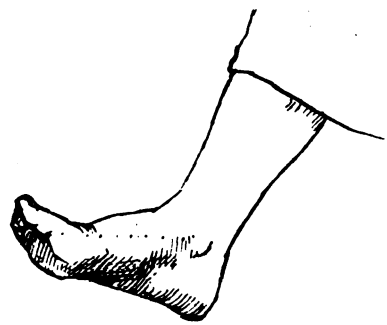

FIG. J.

N.B.—If the leg and foot are not properly stretched, the action of the exercise will be lost. Slight fatigue and a sensation of warmth round the ankle will follow this very effective exercise. It will be well to perform this and the following exercise at night before retiring to rest, so as to gain the fullest benefit from it.

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*Fig.* K.—The foot is in the same position as during the previous exercise. The foot is first pointed downwards as far as it can go, and is then

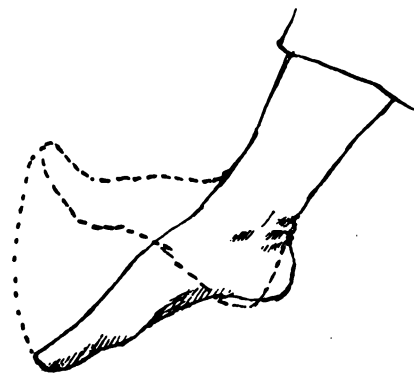

FIG K.

flexed upwards (fig. K, dotted line). To be felt alternately in the front and back of ankle and up the leg.

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**The following RULES to be observed in performing the exercises:—They should be legibly copied on cardboard, and hung up before the student for easy reference.**

1.

No exercise to be of more than two minutes' duration.

2.

The active exercises to be performed gently at the commencement, and gradually increase in vigour.

3.

No exercise whatever to be effected with suspended breath, or by an effort produced by temporarily holding the breath.

4.

The action of the muscles must be in every case calm and equable, and the

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resistance applied must be modified in accordance with their powers.

5.

If the muscles tremble whilst performing a Duplicate exercise it is a sign that the resistance applied is too severe, and must therefore at once be lessened.

6.

The rotatory movements of the fingers (both Active and Passive) must be commenced in small circles, which may be increased in ratio as they acquire pliability.

7.

The Active exercises of the arms and wrists combined, to be performed in a dress that will leave the action of the

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shoulders free,—and which will in no way check the free action of the lungs. Hence the exercises marked with an asterisk, had, in the case of ladies, better be performed in the morning or evening or when divested of the tighter articles of attire.

8.

The manipulations of the fingers may be performed during any spare moments.

9.

As soon as slight fatigue be felt in the muscles, it is advisable, in absence of all control, to desist for a few minutes or pass to another exercise; for example, from a Duplicate or Active to a Passive one.

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10.

Never sit down at the piano immediately after the performance of Active or Duplicate Exercises.

11.

On the other hand, it will be found of assistance to go through the *Passive* finger manipulations just before playing.

12

The exercises may be commenced with either hand.

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# CHAPTER V.

## ON THE STRUCTURE OF THE ARM AND HAND.

The skeleton of the arm and hand consists of thirty bones, of which three compose the arm and twenty-seven the wrist and hand.

The upper portion of the arm from the shoulder to the elbow, consists of one large bone, called the *humerus*. In shape it is almost cylindrical, and terminates in extremities of increased size. The upper extremity is smooth and rounded, and fits into a cavity made to receive it at the shoulder. This arrangement affords the greatest freedom of action to the arm, which can be moved in almost any direction. The lower extremity of the *humerus* we might describe as being divided into three parts.—One at the centre, called the *trochlea*, is of peculiarly irregular shape, in order to articulate with the upper extremities of the *radius* and *ulna*, thus forming the elbow. On either side of the *trochlea* are two rounded margins, termed the external and internal

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*condoyles*, to which we shall have occasion to refer in our description of the muscles.

The *radius* and *ulna* are the two bones which compose the fore-arm. They are long but not quite cylindrical, the *ulna* being slightly convex on one surface, and somewhat concave on another; and the *radius* having three surfaces. The *ulna* is the longer of the two bones. It is large at its upper, and small at its lower, extremity: the reverse being the case with the *radius*, which is large at its lower, and small at its upper, extremity. They lie side by side and articulate with the *humerus* at the elbow, and with the *carpus* at the wrist.

The *carpus*, or wrist, is composed of eight small irregularly-shaped bones, which are placed in two horizontal rows, and are articulated to the lower extremities of the *radius* and *ulna* and the *metacarpus* respectively. They are attached to each other individually by small ligaments; various ligaments also being arranged obliquely and vertically over their inner and outer surfaces collectively, which originate in the lower extremity of the fore-arm, and attach themselves to the *carpus* in various parts.

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It is upon the strength of these ligaments that the power in the wrists to a very great extent depends; and the various exercises for the wrists, which are shown in another portion of this book, are given for the purpose of attaining that end.

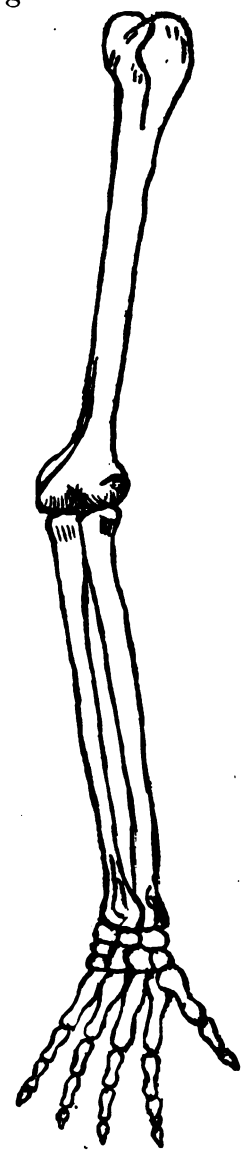

FIG. I.

The *metacarpi* are the five short cylindrical bones comprising the hand. At their upper extremity they are attached to the *carpus*, or wrist; at their lower one with the *phalanges*, or fingers. Four of them, corresponding to the four fingers, are connected loosely with each other by narrow bands of ligament placed horizontally across them; they allow the lateral extremities of the hand on the palm side to approach each other in forming the hollow of the hand, but admit of extremely little or no motion one with the other. The *metacarpus* of the thumb, on

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the contrary, enjoys the greatest freedom: it can be rotated and moved in almost any direction.

The *phalanges* are the small bones of which the fingers are composed. They are fourteen in number —three for each finger and two for the thumb; they are all cylindrical in shape, being larger at their extremities, excepting the lowest, or those forming the ends of the fingers, which terminate in a flattened point.

The bones are articulated one with the other by ligaments, which attach them, but afford no powers of movement, this being solely effected by the muscles.

The muscles are grouped around and along the bone, originating from it and finally being inserted into it at their terminations—and frequently giving out attachments laterally in their course over the bone, or over other muscles.

The principal muscles of the upper portion of the arm may be briefly enumerated; anything like a description of them being unnecessary for our purpose.

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On the front of the arm along the *humerus* are situated the *coraco-brachialis*, the *biceps*, and the *brachialis anticus*—which draw the arm forwards and inwards and assist in bending the fore-arm. On the outer surface of the *humerus* are the *deltoid* and the *triceps*. The former, being situated at the very top of the arm, serves to elevate it in a horizontal line and place it at right angles with the body; the latter is the great *extensor* of the arm, serving to straighten it when bent.

The *extensors* are muscles which straighten the arm and hand; the *flexors* those which bend them; the *adductors* those which draw them inwards, and the *abductors* those which draw them outwards or away from the body.

The powers of the pianiste as regards technique must be centred along the fore-arm, hand and fingers; *i.e.*, centred in so far as power can be localised in any spot which derives its strength from a distant part of the organism.*

* The nerve powers of the arms issue from the upper portion of the Spine and base of Brain; persons having a tendency to weak spines, and being anxious to strengthen the arms for the purposes of their profession, should use cold water to the spine in the morning, followed by a good frictioning with a rough towel until a glow is felt.

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The *extensors* mostly originate at the external *condoyle* of the *humerus*, and passing along the fore-arm, terminate at the wrist, hand and fingers.

Extensor Carpi Radialis Longus,
Extensor Carpi Radialis Brevis,
Extensor Carpi Ulnaris,
Extensor Digitorum Communis Manus.

These four muscles all spring from the external *condoyle* of the *humerus*. The first, passing along the *radius*, goes off into a strong narrow tendon, which, crossing the wrist, becomes ultimately attached to the joint composed of the *metacarpus* and the first *phalange* of the *first finger*.

The three latter have one common muscle-head at the external *condoyle* of the *humerus*.

The *extensor carpi radialis brevis* and the *extensor carpi ulnaris* divide, and previous to arriving at the wrist, go off into strong narrow tendons and become ultimately inserted into the joints formed of the *metacarpus* and first *phalange* of the *second finger*, and into that of the *metacarpus* and first *phalange* of the *little finger* respectively.

THE EXTENSOR DIGITORUM COMMUNIS is situated between the two last named; and passing

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along the back of the arm, ere arriving at the wrist, divides into four strong narrow tendons, sending one

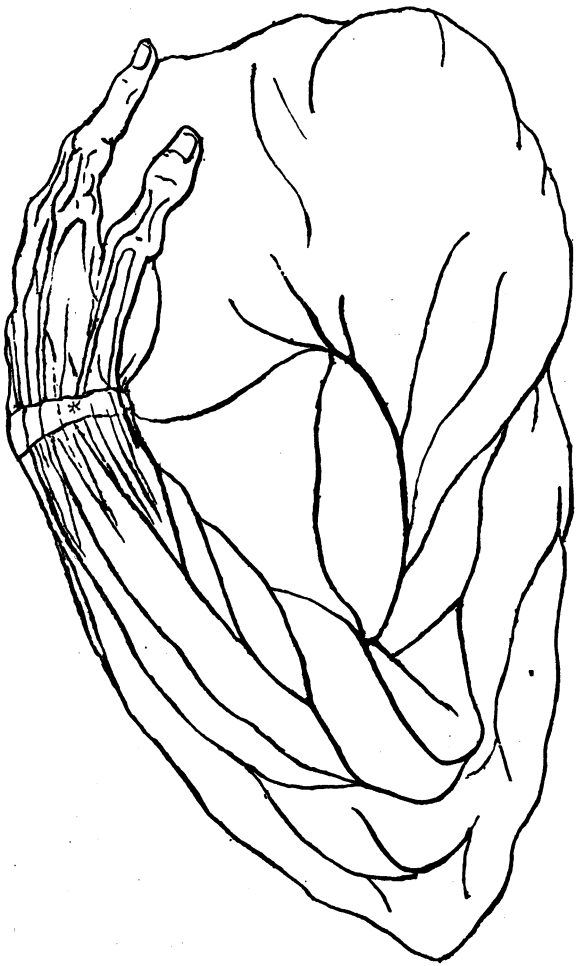

FIG. II.

to each finger, and joining in their course with those tendons already sent to the fingers from the

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other muscles, as previously described. They do not however terminate at the same spot, but are continued up the backs of the fingers to the joints composed of the first and second *phalanges*. Dividing here into three flat pieces, each of the tendons is arranged along the posterior and lateral continuations of the fingers, and terminates at the third *phalange* of each.

EXTENSOR INDICIS PROPRIUS.—This muscle springs from the outer surface of the *ulna*, about midway between the elbow and the wrist, its tendon uniting with one from the *digitorum communis*, is attached to the *first finger*.

The thumb has its separate *extensors*.

EXTENSOR POLLICIS LONGUS springs from the outer surface of the *ulna*, just above the origin of the *indicis proprius;* crosses the arm obliquely, and after uniting itself in its course to various parts of the ligaments covering the wrist, sends forth a strong tendon, which, passing along the *metacarpus* and *phalanges* of the thumb, terminates at its second and last joint.

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THE EXTENSOR POLLICIS BREVIS takes its origin in close proximity to that of the last-named muscle. Towards the wrist it goes off into a tendon, which, passing over the *metacarpus* of the thumb, becomes united with that of the *extensor pollicis longus;* and like it terminates at the second or last *phalange* of the thumb.

THE ABDUCTOR POLLICIS LONGUS has its origin on the inner surface of the *ulna*, just above the roots of the *extensor pollicis longus* and the *extensor pollicis brevis*,—it goes off into a flat tendon which is attached to the *metacarpus* of the thumb.

This muscle draws the thumb apart from the other fingers.

The *flexors* are situated along the internal surface of the arm. They take their origin, for the most part, at the internal *condoyle* of the *humerus*.

FLEXOR CARPI ULNARIS has its origin at the internal *condoyle* of the *humerus*. Passing along the *ulna*, at the lower extremity of which it goes off into a flat roundish tendon, it becomes united to one

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of the *carpi*, and sends forth strong fibres to support the *annular* ligament and surrounding parts.

PALMARIS LONGUS springs from the internal *condoyle* of the *humerus*. The greater part of this muscle goes off into a strong flat tendon, which, passing along the arm, becomes attached to some of the ligaments at the wrist, and thence divides into a number of strong fibres, which it stretches along the palm of the hand.

FLEXOR CARPI RADIALIS has its origin at the inner *condoyle* of the *humerus*, and passing under the arm, its narrow strong tendon unites itself to one of the *carpi*, ultimately terminating at the joint formed of the *metacarpus* and first *phalange* of the first finger.

FLEXOR DIGITORUM SUBLIMIS commences at the inner *condoyle* of the *humerus*, and possesses one origin in common with the *flexor carpi radialis* and the *flexor carpi ulnaris*. Towards the lower half of the fore-arm it divides into four tendons, which, after giving strong uniting fibres in their course, are attached to the inner surfaces of the four fingers; those of the first and second fingers being

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the strongest,—those of the third and fourth the weakest.

FLEXOR DIGITORUM PROFUNDIS MANUS (sometimes styled the perforating *flexor*) has its origin at the upper portion of the *ulna*. It gives off four long narrow tendons, which are situated directly beneath those of the *sublimis*. Until reaching the joint composed of the first and second *phalanges* the tendons of the *sublimis* are perforated, those of the *profundis* passing through them, and becoming intertwined with which, in a wonderful manner, they ultimately terminate at the extremities of the fingers.

FLEXOR POLLICIS LONGUS has its origin at the inner surface of the *radius*, and terminates in a tendon at the second *phalange* of the thumb.

The fleshy part of the thumb is composed of four short muscles—*abductor brevis*, *flexor brevis*, *opponeus*, and *adductor*. All these muscles spring from the *ligamentum carpi volare* (the connecting ligament of the inner surfaces of the *carpi*), and terminate at the thumb. Their names sufficiently indicate their uses.

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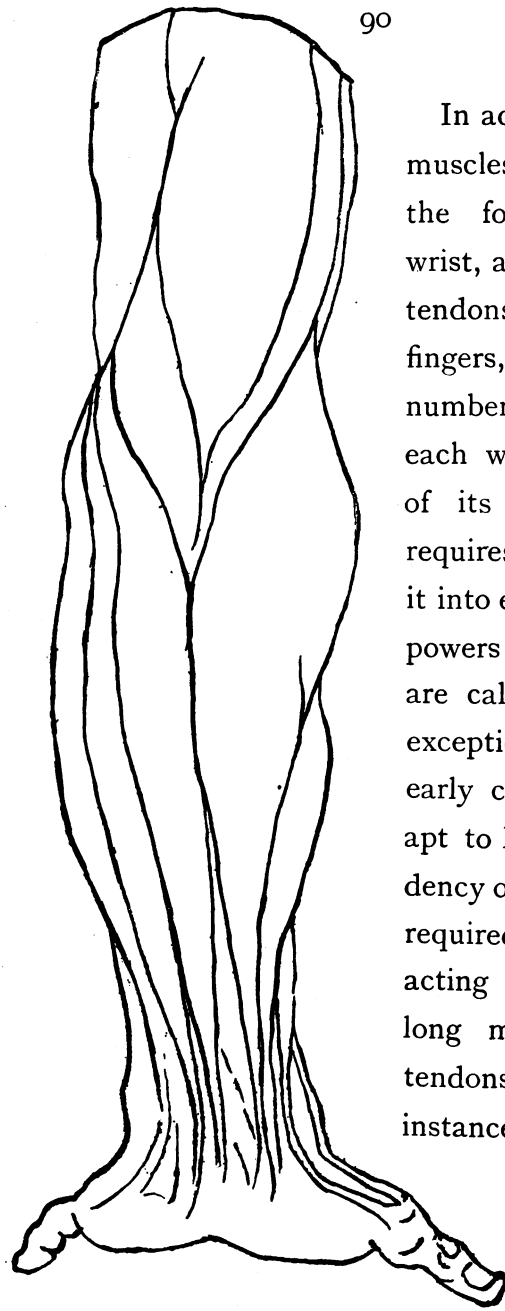

Fig. III.

In addition to the long muscles passing along the fore-arm over the wrist, and sending strong tendons to the several fingers, the latter have a number of short muscles, each with a distinct use of its own, which only requires *practice* to carry it into effect. Unless the powers of these muscles are called forth for some exceptional purposes in early childhood, they are apt to lose their independency of action, and when required are incapable of acting apart from the long muscles to whose tendons they are in many instances attached. And it is owing, in a great measure, to this deficiency of

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localised power that the difficulties encountered by the student of the pianoforte are due.

The short fleshy muscles of the thumb we have already mentioned.

The muscles of the little finger are *palmaris brevis*, *abductor minimi digiti*, *flexor brevis minimi digiti*, *opponens minimi digiti*.

The PALMARIS BREVIS is a short flat muscle, situated on the palm of the hand. It serves to draw the extremities of the same near together, in doing which the skin becomes corrugated.

The ABDUCTOR MINIMI DIGITI is situated on the outer or little finger side of the palm of the hand. It arises from one of the *carpi*, and terminates in a tendon which is attached to the lower extremity of the first *phalange* of the little finger. This muscle draws the whole of the little finger apart from the others.

FLEXOR BREVIS MINIMI DIGITI arises from one of the *carpi*, and passing along the *metacarpi* of the little finger, is united with the previously named muscle. Its action is that of

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bending the little finger inwards to the palm of the hand.

THE OPPONENS MINIMI DIGITI corresponds with the same muscle upon the thumb, it arises from one of the *carpi* and terminates at the outer side of the *metacarpi* of the little finger.

It draws the outer extremity of the hand near to the thumb, and when acting with the *opponens pollicis* produces what is called "the hollow of the hand."

THE LUMBRICALES are four narrow muscles lying along the palm of the hand and sending forth tendons which are inserted into the four fingers respectively.

Each of these muscles bends the first joint of the finger to which it is attached. They also assist in extending the second and third joints.

THE MUSCULI INTEROSSI are small muscles situated *between* the *metacarpal* bones; they are seven in number, four external and three internal. Each muscle has two heads arising from the adjacent

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sides of the bones. They are inserted at their terminations into the fingers.

The external *interossi* serve to draw the fingers apart, the internal to draw them together.

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The accompanying engravings will furnish a superficial view of the skeleton and muscles of the arm.

*Fig.* I.—A view of the skeleton of the arm and hand.

*Fig.* II.—A view of the long muscles of the arm on the outer or dorsal side (*extensors*).

*Fig.* III.—A view of the muscles on the inner side of the arm *(flexors)* and the root of the hand.

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# THE ART OF FIGURE CULTURE

(*Practical Lessons in*)

**A Book for Ladies and Girls,**

**By ANNA LEFFLER-ARNIM.**

This book has been written on the same lines as "Wrist and Finger Gymnastics," its object being to impart some necessary, practical and intelligible instructions which will result in the attainment of an erect, well-proportioned, and elegant figure.

In it the Author has sought to demonstrate that everyone possesses the elements by which a good figure may be built up; and that it is but a matter of training, and wise direction of those elements which are needful to secure the end in view. She further affirms that the shape, size, and construction of the muscles and organs of the human body are such, that it is possible to attain this end, without violating any of nature's laws. On the contrary, that the very means which are used to beautify the figure, will also raise the standard of health to a very appreciable extent.

The exercises used for reducing the size, and refining the outlines of the waist, will also act as a tonic to digestion. Those used for securing an erect and upright carriage; will also strengthen the spine, and brace up the nerves. Those used for widening the chest, will invigorate lungs and heart, whilst the exercises shown for acquiring a graceful carriage of the head, and a full throat, will help to fortify the laryngeal tissues and reduce sore throats to a minimum.**

The exercises should be performed in accordance with the rules, for twenty minutes daily; in two sets of ten minutes each. The Author guarantees that by the use of these exercises, the figure will be so improved, strengthened, and controlled, that both as regards comfort and external appearance, the corset may gradually be wisely abandoned, and that a difference of ten inches between waist and bust measurements may be maintained.

Each exercise is very carefully illustrated and explained and many are so arranged that they can be considerably modified to suit the requirements of those who are not very strong, and need to have all things carefully graduated.

For growing girls, the exercises are invaluable. The book contains sufficient information of its kind to enable any mother to train her girls into graceful, strong and healthy women.

The book is self-contained, and the exercises can be safely proceeded with by any person who will take the trouble to read the text, and follow the rules. They are suitable for ladies of all ages.

No apparatus of any kind required.

** The cultivation of the figure by external compression, has none of these desirable side issues. If the size of the waist is reduced, it is not by the dispersion of adipose tissue, and the refinement of muscle, but by compression, often displacement of the subcostal organs, by the enfeebling of digestion, and the derangement of function. The spine is propped up, instead of encouraged to unfold its own inherent strength, and the spinal muscles become flaccid, ill-nourished and puny. Circulation is impeded, organic activity is reduced to a minimum, waste tissue is accumulated in the system, and negative health, weak nerves, and premature old age becomes the rule instead of the exception. The Author begs all thinking women to ponder upon this matter which she considers one of the foremost of the day; whether women shall be strong, healthy and vigorous as nature indicates, or weakly and suffering as fashion and custom dictate. A question which is so far-reaching in its endless ramifications of cause and effect; that it passes beyond the horizon of our ordinary powers of conception. A question having far less to do with chance, than is generally supposed, far more to do with the commonsense manner or the reverse, in which we discharge the responsibility towards our own health, than most of us have any idea of. The Author has endeavoured in this book to lessen some of the difficulties of this responsibility by bringing into a focus those carefully pre-considered means by which the demands of health and appearance may be conjointly considered, satisfactorily met, and triumphantly overcome.

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## PRESS OPINIONS ON "THE ART OF FIGURE CULTURE."

**British Medical Journal** says:—'Miss Anna Leffler-Arnim in the work before us, condemns the corset, and advocates systematic gymnastics. She holds that a woman should always be encouraged to look her best, without being charged with vanity. But considerations for appearance should ever, she adds, be determined and modified by claims due to health. The postures to be assumed in performing the exercises are represented by drawings. The first principle laid down is care about the initial position taken up at the commencement of each exercise. By the second—very rightly—the learner is commanded never to carry an exercise further than can be done with ease and comfort . . . . . On the same principle, the learner is forbidden to practise two exercises consecutively for the same part of the body . . . . . Every woman, Miss Leffler-Arnim maintains, possesses the natural elements of a waist which may be brought to a high state of perfection by using the correct methods of cultivation. By the daily use of a moderate amount of systematic exercises a well-proportioned waist may be secured and retained.'

**Science Siftings** says :—'We have no hesitation in commending this as one of the most sensible works that have come before us on the subject of Figure Culture. It is written by a woman primarily for women, although it may be studied with advantage by the sterner sex. Miss Leffler-Arnim is uncompromising in her condemnation of the corsets of to-day; and her arguments against the use of this article of feminine apparel are undoubtedly weighty. The Authoress contends that by a persevering course of the exercises she recommends, which by-the-bye do not require the aid of gymnastic appliance, any woman may not only retain the true proportion of the female waist, but preserve a more robust health. A series of excellent diagrams renders the study of the exercises described very intelligible.'

**The Queen** says :—'Miss Leffler-Arnim has had considerable experience in the development of the muscles and the figure generally by exercise, and she writes well upon the subject. She contends that it is possible to do far more to beautify the figure by natural means than by artificial compression, and Miss Leffler-Arnim is the sworn foe of the corset. Her exercises are carefully illustrated.'

**The Gentlewoman** says :—'Gives many admirable and practical hints on exercises intended to strengthen one's muscles, and give one grace and symmetry. By the aid of diagrams the various movements are easily mastered.'

**The Lady** says :—'The harmful attributes of the corset have been so much discussed that the subject is becoming somewhat hackneyed. But this article of apparel has certainly much to answer for in spoiling the natural figure and injuring the vital organs. However when it has been perpetually worn from earliest childhood, the corset certainly does support the body, and, if suddenly discarded, a great deal of discomfort is always experienced. The author of the little book before us acknowledges this state of affairs, and advises no one to discontinue wearing corsets until the figure has been trained and strengthened to a degree which renders it independent of extraneous aid. This desirable state of things can be brought about entirely by judicious exercise, and directions are given for daily exercise, which, if undertaken properly and persevered with, will effect a great improvement, even in the most apparently hopeless cases, strengthening the spine, bracing the muscles, developing the neck, arms, and bust, and controlling the waist. The Authoress who appears to thoroughly understand her subject, declares that a small waist can be induced by harmless, natural means, quite as well as by tight lacing. It should be noted that no gymnastic or other apparatus is needed; therefore the expense of this system of Figure Culture is bounded by the modest cost of the book before us.'

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